PATENT
Customer No. 22,852
Attorney Docket No. 05725.0505-00

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of:	)	
	)	
David W. CANNELL et al.	)	
	)	
Application No.: 09/838,197	)	Group Art Unit: 1751
	)	
Filed: April 20, 2001	)	Examiner: E. Elhilo
	)	
For: COMPOSITION AND METHODS FOR LANTHIONIZING KERATIN FIBERS USING AT LEAST ONE ORGANIC NUCLEOPHILE AND AT LEAST ONE HYDROXIDE ION GENERATOR	)	Confirmation No.: 1548

Mail Stop Appeal Brief--Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

APPEAL BRIEF UNDER 37 C.F.R. § 41.37

Further to the Notice of Appeal filed December 17, 2004, and pursuant to 37 C.F.R. § 41.37, Appellants present this brief and enclose herewith a check for the fee of $500.00 required under 37 C.F.R. § 41.20(b)(2). The period for filing the appeal brief has been extended one month to March 17, 2005, by the accompanying petition and fee.

This appeal is in response to the final Office Action dated July 22, 2004 ("Final Office Action"), rejecting claims 1-74, 157, and 158, which are set forth in the attached Claims Appendix.

Table of Contents

I. Real Party In Interest

L'Oréal S.A. is the assignee of record.

II. Related Appeals and Interferences

Appellants, Appellants' undersigned legal representative, or L'Oréal S.A. know of no other appeals or interferences which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. Status Of Claims

Claims 1-160 are pending in this application. Claims 75-156, 159, and 160 have been withdrawn as being directed to non-elected subject matter. Claims 1-74, 157, and 158 are finally rejected. Final Office Action, page 1.

Specifically, in the Final Office Action, pages 2-6,

(1) claims 1-5, 9-15, 17-24, 26-32, 34-40, 44-50, 52-59, 61-67, 69-73, 157, and 158 have been rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,223,252 to Kolc et al. ("*Kolc*"); and

(2) claims 6-8, 16, 25, 33, 41-43, 51, 60, 68, and 74 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over *Kolc* in view of U.S. Patent No. 5,753,215 to Mougin et al. ("*Mougin*").

IV. Status Of Amendments

In response to the Final Office Action, an amendment to claim 1 was submitted. *See* Amendment and Reply under 37 C.F.R. § 1.116 filed December 17, 2004, page 2. This amendment was not entered by the Examiner. *See* Advisory Action dated January 10, 2005. Thus, no claims have been amended in response to or subsequent to the Final Office Action.

V. Summary Of Claimed Subject Matter

The claims of the present invention recite compositions for lanthionizing keratin fibers comprising at least one organic nucleophile and at least one hydroxide ion generator, wherein said at least one organic nucleophile is present in an amount effective to increase the tensile strength of the keratin fibers and methods for using such compositions. Specification, page 1, lines 1-4. The claims of the present invention also recite pretreatment compositions for lanthionizing keratin fibers comprising at least one organic nucleophile and methods for using such compositions. *Id.* lines 6-8. The inventive compositions may result in relaxed or straightened hair with improved mechanical properties. *Id.* lines 4-6.

One embodiment of the present invention, as recited in independent claim 1, is directed to a composition for lanthionizing keratin fibers comprising at least one organic nucleophile and at least one hydroxide ion generator, wherein the at least one organic nucleophile is present in an amount effective to increase the tensile strength of the keratin fibers, and such an amount ranges from greater than 0.1% but less than 3% by weight relative to the total weight of the composition, with the proviso that if the at least one organic nucleophile is chosen from cysteine and derivatives thereof, the at least one organic nucleophile is present in an amount greater than 1.5% but less than 3% by weight relative to the total weight of the composition. *Id.* page 5, line 14 - page 6, line 1.

Another embodiment of the present invention, as recited in independent claim 36, is directed to a pretreatment composition for lanthionizing keratin fibers comprising at least one organic nucleophile, wherein the pretreatment composition is applied to the

keratin fibers prior to applying a relaxing composition, and further wherein the at least one organic nucleophile is present in an amount effective to increase the tensile strength of the keratin fibers. *Id.* page 6, lines 5-9.

A further embodiment of the present invention, as recited in independent claim 75 (withdrawn), is directed to a method for lanthionizing keratin fibers to achieve relaxation of the keratin fibers, comprising:

applying to the keratin fibers a pretreatment composition comprising at least one organic nucleophile, wherein the at least one organic nucleophile is present in an amount effective to increase the tensile strength of the keratin fibers;

applying a relaxing composition to the pre-treated keratin fibers for a sufficient period of time to lanthionize the keratin fibers; and

terminating the lanthionization when a desired level of relaxation of the keratin fibers has been reached.

Id. page 7, lines 1-7.

An additional embodiment of the present invention, as recited in independent claim 115 (withdrawn), is directed to a method for lanthionizing keratin fibers to achieve relaxation of the keratin fibers, comprising:

applying a relaxing composition to keratin fibers for a sufficient period of time to lanthionize the keratin fibers, wherein the relaxing composition further comprises at least one organic nucleophile, and further wherein the at least one organic nucleophile is present in an amount effective to increase the tensile strength of the keratin fibers ranging from greater than 0.1% but less than 3% by weight relative to the total weight of the relaxing composition; and

terminating the lanthionization when a desired level of relaxation of the keratin fibers has been reached.

Id. page 6, lines 12-20.

Another embodiment of the present invention, as recited in independent claim 151 (withdrawn), is directed to a multicomponent kit for lanthionizing keratin fibers comprising at least two components, which are separate from each other, wherein a first component comprises at least one organic nucleophile, and a second component comprises at least one hydroxide ion generator. *Id.* page 7, lines 8-11.

VI. Grounds of Rejection To Be Reviewed on Appeal

Two grounds of rejection are to be reviewed in this appeal. In the Final Office Action, pages 2-6, the Examiner has maintained:

(1) the rejection of claims 1-5, 9-15, 17-24, 26-32, 34-40, 44-50, 52-59, 61-67, 69-73, 157, and 158 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,223,252 to Kolc et al. ("*Kolc*"); and

(2) the rejection of claims 6-8, 16, 25, 33, 41-43, 51, 60, 68, and 74 under 35 U.S.C. § 103(a) as being unpatentable over *Kolc* in view of U.S. Patent No. 5,753,215 to Mougin et al. ("*Mougin*").

VII. Argument

Each claim of the present application is separately patentable, and upon issuance of a patent will be entitled to a separate presumption of validity under 35 U.S.C. § 282. The arguments set forth below are arranged under subheadings, and in accordance with 37 C.F.R. § 41.37(c)(1)(vii), these subheadings indicate the claims whose patentability are argued separately.

The § 102(b) Rejection

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Further, a rejection under § 102 is proper only when the claimed subject matter is identically described or disclosed in the prior art. *In re Arkley*, 455 F.2d 586, 587, 172 USPQ 524, 526 (CCPA 1972). "The identical invention must be shown in as complete detail as is contained in the . . . claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

A. Claims 1-5, 9-15, 17-24, 26-32, 34, 35, and 157 Are Not Anticipated by *Kolc*

In the present case, the Examiner has failed to establish that the composition disclosed in *Kolc* is identical to the composition claimed in claims 1-5, 9-15, 17-24, 26-32, 34, 35, and 157 of the present invention. Specifically, *Kolc* does not expressly or inherently teach a composition for lanthionizing keratin fibers as claimed in, for example, claim 1 of the present invention.

The Examiner alleges that *Kolc* teaches "a mild alkaline reducing composition for permanently waving or reshaping human hair" comprising "mercaptan derivatives such as 2-amino-3-mercaptopropic acid, from about 2.0% to about 3.0% of cysteine compound (see col. 4, lines 31-49), amines such as alkanolamine and ammonia, metal hydroxides (see col. 5, lines 65-68) and alcohols such as ethanol and isopropanol (see col. 7, lines 32-33) and other constituents such as fatty alcohols (see col. 6, lines 2-3) and ammonium carbonate (see col. 5, lines 65-66)," "wherein the composition has a pH in the range of about 7.5 to about 9.5 (see abstract)." Final Office Action, pages 2-3; Advisory Action dated January 10, 2005, page 2. In addition, the Examiner alleges that Composition 3 disclosed in column 3 of *Kolc* comprises "at least one organic nucleophile of cysteine free base in the amount of 2.00% and a compound of ammonium hydroxide as a hydroxide ion generator as claimed." Office Action dated August 6, 2003, pages 2-3. The Examiner concludes that because *Kolc* "teaches all the limitations of the instant claims," *Kolc* anticipates the rejected claims. Final Office Action, page 3. Appellants respectfully disagree for at least the following reasons.

First, as the Examiner admits, *Kolc* "teaches a mild alkaline reducing composition for permanently waving or reshaping human hair." Final Office Action, page 2 (emphasis added). A reducing composition is different from a lanthionizing composition. As explained in *Kolc*, a reducing composition can cause the disulfide bonds in the hair to be broken and such disulfide bonds using two sulphur atoms on adjacent polypeptide chains ($-CH_2-S-S-CH_2-$) can be "relinked or reestablished" using "an oxidizing agent, such as hydrogen peroxide or a water-soluble bromate." *Kolc*, col. 1, lines 42-50. In contrast, as explained in "*Milady's Hair Structure and Chemistry Simplified*" by Douglas

D. Schoon, pages 191-192 ("*Schoon*") submitted by Appellants on February 5, 2004, a lanthionizing composition can also cause the disulfide bonds in the hair to be broken, but form "a single sulphur cross-link bond" ($-CH_2-S-CH_2-$), i.e., a "lanthionine cross-link." *Schoon*, at page 192 (emphasis added). In other words, to reshape hair, a reducing composition, which is usually followed by application of an oxidizing agent as disclosed in *Kolc*, leads to different chemical modification to the hair than a lanthionizing composition.

In addition, the pH value of a reducing composition is usually not high enough to cause lanthionizing, because the formation of the lanthionine cross-link requires "[h]ighly alkaline products" with pH levels between 12 and 13.5. *See Schoon*, at pages 191-192. One example of the "[h]ighly alkaline products" is sodium hydroxide, which can sometimes provide pH levels of greater than 13.5. *Id.* at page 191.

Here, Composition 3 disclosed in *Kolc* has a pH value of 7.5, which is not sufficient to lanthionize hair. Therefore, consistent with the disclosure of *Kolc*, Composition 3 is a reducing composition, but not a composition for lanthionizing keratin fibers. Similarly, because the compositions disclosed in *Kolc* are reducing compositions having "a pH in the range of about 7.5 to about 9.5" as admitted by the Examiner, they do not have sufficiently high pH values to lanthionize keratin fibers.

Nevertheless, the Examiner alleges that because the composition disclosed in *Kolc* "has the same ingredients [as those] recited in the instant claims," it "should have identical chemical properties include[ing] the lanthionization property." Advisory Action dated January 10, 2005, page 2. Appellants respectfully disagree. Since the compositions of *Kolc* have a different pH than the compositions of the claimed invention,

the compositions of *Kolc* cannot have the same ingredients in the same amounts as the compositions of the claimed invention. Therefore, the compositions of *Kolc* are not identical and do not anticipate the instant claims.

The Examiner further alleges that because *Schoon* "teaches that the low pH reducers are used as the relaxers and are recommended for thin or brittle hair (see page 1[9]1, paragraph 5),"[1] the composition of *Kolc* "can be used for lanthionizing the keratin fibers as claimed." Final Office Action, page 5. Applicants respectfully disagree.

Schoon clearly distinguishes "Low pH Reducers" and "Other Alkaline Reducers" i.e., the "[h]ighly alkaline products" by using different headings. *See Schoon*, pages 191-192. And *Schoon* teaches that only the "[h]ighly alkaline products" can create the lanthionine cross-link. *See id.* at page 192. In addition, *Schoon* teaches that the low pH reducers "are less effective in straightening hair, especially resistant hair." *Id.* at page 191. Therefore, even in view of *Schoon*, *Kolc* does not teach that its reducing compositions can be used for lanthionizing the keratin fibers, contrary to the Examiner's assertion.

Accordingly, as the compositions disclosed in *Kolc* are not identical as the composition recited in the instant claims, this rejection is improper and should be reversed and withdrawn.

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[1] Appellants reasonably believe that the Examiner has made a typographic error in the Office Action, page 5, line 5, in reciting page 191 of *Schoon* instead of page 11. Appellants have respectfully requested clarification of the record. *See* Amendment and Reply under 37 C.F.R. § 1.116 filed December 17, 2004, page 32. Appellants reasonably believe that the Examiner agrees with the correction, because the Examiner did not object to it. *See* Advisory Action dated January 10, 2005.

B. Claims 36-40, 44-50, 52-59, 61-67, 69-73, and 158 Are Not Anticipated by *Kolc*

The Examiner has also failed to establish that *Kolc* expressly or inherently teaches each and every element in claims 36-40, 44-50, 52-59, 61-67, 69-73, and 158 of the present invention. Specifically, *Kolc* does not expressly or inherently teach a "pretreatment composition for lanthionizing keratin fibers," which "is applied to said keratin fibers prior to applying a relaxing composition" as recited in, for example, claim 36 of the present invention.

The Examiner alleges that *Kolc* teaches "the pretreatment composition by contacting the hair with an aqueous reducing agent containing composition consisting of cysteine free base as claimed in claim 36 [of the present invention] (see col. 12, claim 16)." Office Action dated August 6, 2003, page 3. Therefore, the Examiner concludes that *Kolc* anticipates the rejected claims 36-40, 44-50, 52-59, 61-67, 69-73, and 158 of the present invention. Appellants respectfully disagree for at least the following reasons.

First, *Kolc* fails to teach a composition that is a "pretreatment composition for lanthionizing keratin fibers," which "is applied to said keratin fibers prior to applying a relaxing composition" as recited in, for example, claim 36 of the present invention.

Second, the Examiner has apparently misinterpreted claim 16 of *Kolc*. Claim 16 of *Kolc* recites, in relevant part, a "method of breaking sulfur to sulfur bonds in human hair . . . including contacting the hair with an aqueous reducing agent containing composition consisting of . . . a crysteine free base . . . an alkaline thioglycolate; and sufficient alkali such that the composition has a pH of about 7.5 to about 9.5."

(Emphasis added). Therefore, the composition recited in claim 16 of *Kolc* is simply the same reducing composition discussed above in subsection A, which is used for a "method of breaking sulfur to sulfur bonds in human hair". It is not a teaching of a pretreatment composition for lanthionizing keratin fibers being applied to the keratin fibers prior to applying a relaxing composition as recited in the instant claims.

Finally, the Examiner alleges that "the recitation [of] 'pretreatment composition for lanthionizing[ ]of keratin fibers' has not [been] given patentable weight because the recitation occurs in the preamble." Advisory Action dated January 10, 2005, page 3. Appellants respectfully disagree. The limitation of a "pretreatment composition" is recited in the body of, for example, instant claim 36. Accordingly, "pretreatment composition for lanthionizing of keratin fibers" should be given patentable weight.

In summary, as *Kolc* does not teach a pretreatment composition for lanthionizing keratin fibers comprising at least one organic nucleophile, wherein said pretreatment composition is applied to said keratin fibers prior to applying a relaxing composition, and further wherein said at least one organic nucleophile is present in an amount effective to increase the tensile strength of said keratin fibers as recited in claims 36-40, 44-50, 52-59, 61-67, 69-73, and 158, this rejection is improper and should be reversed and withdrawn.

The § 103(a) Rejection

In order to carry the initial burden of establishing a *prima facie* case of obviousness, the Examiner must first show that the prior art references teach or suggest all the claim limitations. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). The Examiner must also show that there is some suggestion or motivation, either in the references or in the knowledge generally available to one of ordinary skill in the art, to modify or combine the references. *In re Rouffet*, 149 F.3d 1350, 47 USPQ2d 1453 (Fed. Cir. 1998). The suggestion or motivation "must be found in the prior art reference, not in the Applicant's disclosure." *In re Vaeck*, 947 F.2d 488, 493, 20 USPQ2d 1438, 1442 (Fed. Cir. 1991).

C. Claims 6-8, 16, 25, and 33 Are Patentable over *Kolc* in view of *Mougin*

In the present case, a *prima facie* case of obviousness has not been established for claims 6-8, 16, 25, and 33, because the Examiner has failed to point to any evidence to satisfy either one of the two requirements set forth above.

The Examiner admits that *Kolc* does not teach "a composition comprising organic nucleophiles such as arginine and lysine as claimed in claims 6-8 and 41-43," "alkali metal salts, alkaline earth metal salts, organic addition salts or inorganic addition salts as claimed in claims 16, 25, 33, 51, 60 and 68," or "organic nucleophile in an amount of 0.2% as claimed in claim 74." Final Office Action, page 3. To remedy these deficiencies, the Examiner relies on *Mougin* and alleges that it would have been obvious to modify *Kolc* "by incorporating the lysine, argining compounds and polyvalent salts" disclosed in *Mougin* to obtain the composition as claimed in the present invention,

because both references are "in analogous art of hair cosmetic composition" and related to reshaping hairs. *Id.* at pages 3-5. Appellants respectfully disagree for at least the following reasons.

Kolc and *Mougin* either alone or in combination fail to teach or suggest that their compositions can be used to lanthionize keratin fibers. As discussed above in subsection A, *Kolc* merely teaches a mild alkaline permanent wave reducing composition, which is quite different from a lanthionizing composition. *Mougin* does not cure this deficiency.

On the contrary, *Mougin* teaches away from the high pH levels required for lanthionizing keratin fibers. According to *Mougin*, "cosmetic compositions according to the invention generally have a pH approximately between 7 and 7.2." *Mougin*, col. 6, lines 43-44. Thus, neither *Kolc* nor *Mougin* teaches a composition for lantionizing keratin fibers.

Moreover, if one assumes for the sake of argument that *Kolc* does teach a composition for lanthionizing keratin fibers, there is no motivation to combine *Kolc* with *Mougin* since *Mougin* teaches away from using its compositions at such a high pH. For at least these reasons, this rejection is improper and should be reversed and withdrawn.

Finally, the Examiner has not met his burden to establish a *prima facie* case of obviousness since he has failed to point to any evidence of a suggestion or motivation to modify the composition of *Kolc* "by incorporating the lysine, argining compounds and polyvalent salts" disclosed in *Mougin*.

Specifically, *Mougin* discloses a cosmetic composition comprising a pseudo-latex. *Mougin*, col. 1, lines 7-9. The pseudo-latex consists of "particles of a film-forming

radical polymer containing carboxylic acid functions neutralized to a degree of neutralization between 10 and 80% using a polyfunctional neutralizing agent consisting either of a diamine or of the combination of a polyvalent metal salt and an organic or inorganic base." *Id.* at col. 1, lines 50-60. The "diamines as neutralizing agents are chosen from lysine, arginine or cystine." *Id.* at col. 4, lines 26-27. Therefore, "the polyvalent salts and the lysine, argining compounds" disclosed *Mougin* are neutralizing agents for the pseudo-latex. The composition of *Kolc* does not include pseudo-latexes that require neutralization. Therefore, one of ordinary skill in the art would not be motivated to add any neutralizing agent to *Kolc*'s composition, much less the neutralizing agents of *Mougin*.

Appellants respectfully submit that the mere presence of a small overlap of "similar ingredients" between the references is not sufficient to modify or combine reference teachings. The Federal Circuit has clearly stated that the evidence of a motivation or suggestion to modify a reference must be "clear and particular." *In re Dembicziak*, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999). The Examiner can satisfy the burden of establishing a *prima facie* case of obviousness "only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to [modify or] combine the relevant teachings of the references." *In re Fine*, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988) (citations omitted) (emphasis added). The Federal Circuit has reaffirmed the Examiner's high burden to establish a prima facie case of obviousness and has emphasized the requirement of specificity. *See In re Sang-Su Lee*, 277 F.3d 1338, 61 USPQ2d 1430 (Fed. Cir. 2002). The Examiner's

conclusory statement that *Mougin* is in "analogous art" of a "hair straightening composition" is too vague to satisfy such a high burden set forth by the Federal Circuit, especially in view of the teachings of the reference as a whole as described herein.

Accordingly, as the Examiner has failed to establish a *prima facie* case of obviousness for claims 6-8, 16, 25, and 33, this rejection is improper and should be reversed and withdrawn.

D. Claims 41-43, 51, 60, 68, and 74 Are Patentable over *Kolc* in view of *Mougin*

The Examiner has also failed to establish a *prima facie* case of obviousness for claims 41-43, 51, 60, 68, and 74 for at least the following reasons.

As discussed in subsection B, *Kolc* fails to teach or suggest a composition that is a "pretreatment composition for lanthionizing keratin fibers," which "is applied to said keratin fibers prior to applying a relaxing composition" as recited in, for example, instant claim 36. *Mougin* fails to cure this deficiency. The Examiner's reliance on *Mougin* is limited to its teaching of organic nucleophiles and polyvalent metal salts to remedy *Kolc*'s deficiency of lack of such teachings. *See* Final Office Action, page 3.

Moreover, as discussed in subsection C, the Examiner has failed to point to any evidence of a suggestion or motivation to modify the composition of *Kolc* "by incorporating the lysine, argining compounds and polyvalent salts" disclosed in *Mougin*.

Accordingly, as the Examiner has failed to establish a *prima facie* case of obviousness for claims 41-43, 51, 60, 68, and 74, this rejection is improper and should be reversed and withdrawn.

Conclusion

In view of the foregoing, Appellants respectfully submit that a *prima facie* case of obviousness has not been established, and request that the outstanding § 102(b) and §103(a) rejections be reversed and withdrawn.

VIII. Claims Appendix

1. (original) A composition for lanthionizing keratin fibers comprising at least one organic nucleophile and at least one hydroxide ion generator, wherein said at least one organic nucleophile is present in an amount effective to increase the tensile strength of said keratin fibers, said amount ranging from greater than 0.1% but less than 3% by weight relative to the total weight of the composition, with the proviso that if said at least one organic nucleophile is chosen from cysteine and derivatives thereof, said at least one organic nucleophile is present in an amount greater than 1.5% but less than 3% by weight relative to the total weight of said composition.

2. (original) A composition for lanthionizing keratin fibers according to claim 1, wherein said at least one organic nucleophile is generated by at least one organic nucleophile source.

3. (original) A composition for lanthionizing keratin fibers according to claim 2, wherein said at least one organic nucleophile is generated *in situ*.

4. (original) A composition for lanthionizing keratin fibers according to claim 1, wherein said at least one organic nucleophile is chosen from basic amino acids, amines, alcohols, and mercaptans.

5. (original) A composition for lanthionizing keratin fibers according to claim 2, wherein said at least one organic nucleophile source is chosen from derivatives of basic amino acids, derivatives of amines, derivatives of alcohols, and derivatives of mercaptans.

6. (original) A composition for lanthionizing keratin fibers according to claim 4, wherein said basic amino acids are chosen from lysine, arginine, and histidine.

7. (original) A composition for lanthionizing keratin fibers according to claim 6, wherein said basic amino acids are chosen from lysine and arginine.

8. (original) A composition for lanthionizing keratin fibers according to claim 7, wherein said basic amino acids are chosen from lysine and arginine in a non-ionic form, an ammonium form, and a carboxylate form.

9. (original) A composition for lanthionizing keratin fibers according to claim 4, wherein said at least one organic nucleophile is chosen from amines of the following formula and salts thereof:

$$N(R)_3.$$

wherein each R is independently chosen from a hydrogen atom, linear, branched, substituted, and unsubstituted C_1-C_{10} alkyl groups, and linear, branched, substituted, and unsubstituted C_1-C_{10} alkenyl groups.

10. (original) A composition for lanthionizing keratin fibers according to claim 9, wherein R comprises from 1 to 6 carbon atoms.

11. (original) A composition for lanthionizing keratin fibers according to claim 10, wherein R comprises from 1 to 4 carbon atoms.

12. (original) A composition for lanthionizing keratin fibers according to claim 9, wherein at least one R is substituted with at least one group chosen from –COOR, $-COON(R)_2$, –OH, –SH, $-N(R)_2$ and salts of any of the foregoing, wherein each R is independently chosen from a hydrogen atom, linear, branched, substituted, and unsubstituted C_1-C_{10} alkyl groups, and linear, branched, substituted, and unsubstituted C_1-C_{10} alkenyl groups.

13. (original) A composition for lanthionizing keratin fibers according to claim 12, wherein R comprises from 1 to 6 carbon atoms.

14. (original) A composition for lanthionizing keratin fibers according to claim 13, wherein R comprises from 1 to 4 carbon atoms.

15. (original) A composition for lanthionizing keratin fibers according to claim 9, wherein said salts are chosen from ammonium salts, alkali metal salts, alkaline earth metal salts, organic acid addition salts and inorganic acid addition salts.

16. (original) A composition for lanthionizing keratin fibers according to claim 15, wherein said salts are chosen from sodium salts, potassium salts, calcium salts, salts derived from hydrochloric acid, salts derived from sulphuric acid, salts derived from phosphoric acid, salts derived from acetic acid, salts derived from citric acid, and salts derived from tartaric acid.

17. (original) A composition for lanthionizing keratin fibers according to claim 4, wherein said amines are chosen from isopropylamine, monoethanolamine, and aminomethylpropanol.

18. (original) A composition for lanthionizing keratin fibers according to claim 4, wherein said at least one organic nucleophile is chosen from alcohols of the following formula and salts thereof:

R-OH

wherein R is chosen from linear, branched, substituted, and unsubstituted C_1-C_{10} alkyl groups, and linear, branched, substituted, and unsubstituted C_1-C_{10} alkenyl groups.

19. (original) A composition for lanthionizing keratin fibers according to claim 18, wherein R comprises from 1 to 6 carbon atoms.

20. (original) A composition for lanthionizing keratin fibers according to claim 19, wherein R comprises from 1 to 4 carbon atoms.

21. (original) A composition for lanthionizing keratin fibers according to claim 18, wherein R is substituted with at least one group chosen from –COOR', $-COON(R')_2$, –OH, –SH, $-N(R')_2$ and salts of any of the foregoing, wherein each R' is independently chosen from a hydrogen atom, linear, branched, substituted, and unsubstituted C_1-C_{10} alkyl groups, and linear, branched, substituted, and unsubstituted C_1-C_{10} alkenyl groups.

22. (original) A composition for lanthionizing keratin fibers according to claim 21, wherein R comprises from 1 to 6 carbon atoms.

23. (original) A composition for lanthionizing keratin fibers according to claim 22, wherein R comprises from 1 to 4 carbon atoms.

24. (original) A composition for lanthionizing keratin fibers according to claim 18, wherein said salts are chosen from ammonium salts, alkali metal salts, alkaline earth metal salts, organic acid addition salts and inorganic acid addition salts.

25. (original) A composition for lanthionizing keratin fibers according to claim 24, wherein said salts are chosen from sodium salts, potassium salts, calcium salts, salts derived from hydrochloric acid, salts derived from sulphuric acid, salts derived from phosphoric acid, salts derived from acetic acid, salts derived from citric acid, and salts derived from tartaric acid.

26. (original) A composition for lanthionizing keratin fibers according to claim 4, wherein said at least one organic nucleophile is chosen from mercaptans of the following formula and salts thereof:

R-SH

wherein R is chosen from linear, branched, substituted, and unsubstituted C1-C10 alkyl groups, and linear, branched, substituted, and unsubstituted C1-C10 alkenyl groups.

27. (original) A composition for lanthionizing keratin fibers according to claim 26, wherein R comprises from 1 to 6 carbon atoms.

28. (original) A composition for lanthionizing keratin fibers according to claim 27, wherein R comprises from 1 to 4 carbon atoms.

29. (original) A composition for lanthionizing keratin fibers according to claim 26, wherein R is substituted with at least one group chosen from –COOR, $–COON(R)_2$, –OH, –SH, $–N(R)_2$ and salts of any of the foregoing, wherein each R is independently chosen from a hydrogen atom, linear, branched, substituted, and unsubstituted C_1-C_{10} alkyl groups, and linear, branched, substituted, and unsubstituted C_1-C_{10} alkenyl groups.

30. (original) A composition for lanthionizing keratin fibers according to claim 29, wherein R comprises from 1 to 6 carbon atoms.

31. (original) A composition for lanthionizing keratin fibers according to claim 30, wherein R comprises from 1 to 4 carbon atoms.

32. (original) A composition for lanthionizing keratin fibers according to claim 26, wherein said salts are chosen from ammonium salts, alkali metal salts, alkaline earth metal salts, organic acid addition salts, and inorganic acid addition salts.

33. (original) A composition for lanthionizing keratin fibers according to claim 32, wherein said salts are chosen from sodium salts, potassium salts, calcium salts, salts derived from hydrochloric acid, salts derived from sulphuric acid, salts derived from phosphoric acid, salts derived from acetic acid, salts derived from citric acid, and salts derived from tartaric acid.

34. (original) A composition for lanthionizing keratin fibers according to claim 1, further comprising at least one other constituent chosen from solvents; preservatives; perfumes; UV filters; active hair care agents; plasticizers; anionic, cationic, amphoteric, nonionic, and zwitterionic surfactants; hair conditioning agents; silicone fluids; fatty esters; fatty alcohol, fatty chain hydrocarbons; emollients; lubricants; penetrants; anionic, cationic, amphoteric, nonionic, and zwitterionic polymers; dyes; tints; bleaches; reducing agents; pH adjusting agents; sunscreens; thickening agents; and at least one agent chosen from chelating agents, sequestering agents and salts thereof.

35. (original) A composition for lanthionizing keratin fibers according to claim 1, further comprising at least one additional nucleophile different from said at least one organic nucleophile.

36. (previously presented) A pretreatment composition for lanthionizing keratin fibers comprising at least one organic nucleophile, wherein said pretreatment composition is applied to said keratin fibers prior to applying a relaxing composition, and

further wherein said at least one organic nucleophile is present in an amount effective to increase the tensile strength of said keratin fibers.

37. (original) A pretreatment composition for lanthionizing keratin fibers according to claim 36, wherein said at least one organic nucleophile is generated by at least one organic nucleophile source.

38. (original) A pretreatment composition for lanthionizing keratin fibers according to claim 36, wherein said at least one organic nucleophile is generated *in situ*.

39. (original) A pretreatment composition for lanthionizing keratin fibers according to claim 36, wherein said at least one organic nucleophile is chosen from basic amino acids, amines, alcohols, and mercaptans.

40. (original) A pretreatment composition for lanthionizing keratin fibers according to claim 37, wherein said at least one organic nucleophile source is chosen from derivatives of basic amino acids, derivatives of amines, derivatives of alcohols, and derivatives of mercaptans.

41. (original) A pretreatment composition for lanthionizing keratin fibers according to claim 39, wherein said basic amino acids are chosen from lysine, arginine, and histidine.

42. (original) A pretreatment composition for lanthionizing keratin fibers according to claim 41, wherein said basic amino acids are chosen from lysine and arginine.

43. (original) A pretreatment composition for lanthionizing keratin fibers according to claim 42, wherein said basic amino acids are chosen from lysine and arginine in a non-ionic form, an ammonium form, and a carboxylate form.

44. (original) A pretreatment composition for lanthionizing keratin fibers according to claim 39, wherein said at least one organic nucleophile is chosen from amines of the following formula and salts thereof:

$$N(R)_3$$

wherein each R is independently chosen from a hydrogen atom, linear, branched, substituted, and unsubstituted C_1-C_{10} alkyl groups, and linear, branched, substituted, and unsubstituted C_1-C_{10} alkenyl groups.

45. (original) A pretreatment composition for lanthionizing keratin fibers according to claim 44, wherein R comprises from 1 to 6 carbon atoms.

46. (original) A pretreatment composition for lanthionizing keratin fibers according to claim 45, wherein R comprises from 1 to 4 carbon atoms.

47. (original) A pretreatment composition for lanthionizing keratin fibers according to claim 44, wherein at least one R is substituted with at least one group chosen from –COOR, $–COON(R)_2$, –OH, –SH, $–N(R)_2$ and salts of any of the foregoing, wherein each R is independently chosen from a hydrogen atom, linear, branched, substituted, and unsubstituted C_1-C_{10} alkyl groups, and linear, branched, substituted, and unsubstituted C_1-C_{10} alkenyl groups.

48. (original) A pretreatment composition for lanthionizing keratin fibers according to claim 47, wherein R comprises from 1 to 6 carbon atoms.

49. (original) A pretreatment composition for lanthionizing keratin fibers according to claim 48, wherein R comprises from 1 to 4 carbon atoms.

50. (original) A pretreatment composition for lanthionizing keratin fibers according to claim 44, wherein said salts are chosen from ammonium salts, alkali metal

salts, alkaline earth metal salts, organic acid addition salts and inorganic acid addition salts.

51. (original) A pretreatment composition for lanthionizing keratin fibers according to claim 50, wherein said salts are chosen from sodium salts, potassium salts, calcium salts, salts derived from hydrochloric acid, salts derived from sulphuric acid, salts derived from phosphoric acid, salts derived from acetic acid, salts derived from citric acid, and salts derived from tartaric acid.

52. (original) A pretreatment composition for lanthionizing keratin fibers according to claim 39, wherein said amines are chosen from isopropylamine, monoethanolamine, and aminomethylpropanol.

53. (original) A pretreatment composition for lanthionizing keratin fibers according to claim 39, wherein said at least one organic nucleophile is chosen from alcohols of the following formula and salts thereof:

R-OH

wherein R is chosen from linear, branched, substituted, and unsubstituted C_1-C_{10} alkyl groups, and linear, branched, substituted, and unsubstituted C_1-C_{10} alkenyl groups.

54. (original) A pretreatment composition for lanthionizing keratin fibers according to claim 53, wherein R comprises from 1 to 6 carbon atoms.

55. (original) A pretreatment composition for lanthionizing keratin fibers according to claim 54, wherein R comprises from 1 to 4 carbon atoms.

56. (original) A pretreatment composition for lanthionizing keratin fibers according to claim 53, wherein R is substituted with at least one group chosen from

–COOR', –COON(R')$_2$, –OH, –SH, –N(R')$_2$ and salts of any of the foregoing, wherein each R' is independently chosen from a hydrogen atom, linear, branched, substituted, and unsubstituted C_1-C_{10} alkyl groups, and linear, branched, substituted, and unsubstituted C_1-C_{10} alkenyl groups.

57. (original) A pretreatment composition for lanthionizing keratin fibers according to claim 56, wherein R comprises from 1 to 6 carbon atoms.

58. (original) A pretreatment composition for lanthionizing keratin fibers according to claim 57, wherein R comprises from 1 to 4 carbon atoms.

59. (original) A pretreatment composition for lanthionizing keratin fibers according to claim 53, wherein said salts are chosen from ammonium salts, alkali metal salts, alkaline earth metal salts, organic acid addition salts and inorganic acid addition salts.

60. (original) A pretreatment composition for lanthionizing keratin fibers according to claim 59, wherein said salts are chosen from sodium salts, potassium salts, calcium salts, salts derived from hydrochloric acid, salts derived from sulphuric acid, salts derived from phosphoric acid, salts derived from acetic acid, salts derived from citric acid, and salts derived from tartaric acid.

61. (original) A pretreatment composition for lanthionizing keratin fibers according to claim 39, wherein said at least one organic nucleophile is chosen from mercaptans of the following formula and salts thereof:

R-SH

wherein R is chosen from linear, branched, substituted, and unsubstituted C_1-C_{10} alkyl groups, and linear, branched, substituted, and unsubstituted C_1-C_{10} alkenyl groups.

62. (original) A pretreatment composition for lanthionizing keratin fibers according to claim 61, wherein R comprises from 1 to 6 carbon atoms.

63. (original) A pretreatment composition for lanthionizing keratin fibers according to claim 62, wherein R comprises from 1 to 4 carbon atoms.

64. (original) A pretreatment composition for lanthionizing keratin fibers according to claim 61, wherein R is substituted with at least one group chosen from –COOR, –COON$(R)_2$, –OH, –SH, –N$(R)_2$ and salts of any of the foregoing, wherein each R is independently chosen from a hydrogen atom, linear, branched, substituted, and unsubstituted C_1-C_{10} alkyl groups, and linear, branched, substituted, and unsubstituted C_1-C_{10} alkenyl groups.

65. (original) A pretreatment composition for lanthionizing keratin fibers according to claim 64, wherein R comprises from 1 to 6 carbon atoms.

66. (original) A pretreatment composition for lanthionizing keratin fibers according to claim 65, wherein R comprises from 1 to 4 carbon atoms.

67. (original) A pretreatment composition for lanthionizing keratin fibers according to claim 61, wherein said salts are chosen from ammonium salts, alkali metal salts, alkaline earth metal salts, organic acid addition salts and inorganic acid addition salts.

68. (original) A pretreatment composition for lanthionizing keratin fibers according to claim 67, wherein said salts are chosen from sodium salts, potassium

salts, calcium salts, salts derived from hydrochloric acid, salts derived from sulphuric acid, salts derived from phosphoric acid, salts derived from acetic acid, salts derived from citric acid, and salts derived from tartaric acid.

69. (original) A pretreatment composition for lanthionizing keratin fibers according to claim 36, further comprising at least one other constituent chosen from solvents; preservatives; perfumes; UV filters; active hair care agents; plasticizers; anionic, cationic, amphoteric, nonionic, and zwitterionic surfactants; hair conditioning agents; silicone fluids; fatty esters; fatty alcohol, fatty chain hydrocarbons; emollients; lubricants; penetrants; anionic, cationic, amphoteric, nonionic, and zwitterionic polymers; dyes; tints; bleaches; reducing agents; pH adjusting agents; sunscreens; thickening agents; and at least one agent chosen from chelating agents, sequestering agents and salts thereof.

70. (original) A pretreatment composition for lanthionizing keratin fibers according to claim 36, further comprising at least one additional nucleophile different from said at least one nucleophile.

71. (original) A pretreatment composition for lanthionizing keratin fibers according to claim 36, wherein said at least one organic nucleophile is present in an amount ranging up to 100% by weight relative to the total weight of the pretreatment composition.

72. (original) A pretreatment composition for lanthionizing keratin fibers according to claim 71, wherein said at least one organic nucleophile is present in an amount ranging from 0.001% to 10.0% by weight relative to the total weight of the pretreatment composition.

73. (original) A pretreatment composition for lanthionizing keratin fibers according to claim 72, wherein said at least one organic nucleophile is present in an amount ranging from 0.01% to 2.0% by weight relative to the total weight of the pretreatment composition.

74. (original) A pretreatment composition for lanthionizing keratin fibers according to claim 73, wherein said at least one organic nucleophile is present in an amount of 0.2% by weight relative to the total weight of the pretreatment composition.

75. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers, comprising:

applying to said keratin fibers a pretreatment composition comprising at least one organic nucleophile, wherein said at least one organic nucleophile is present in an amount effective to increase the tensile strength of said keratin fibers;

applying a relaxing composition to said pre-treated keratin fibers for a sufficient period of time to lanthionize said keratin fibers; and

terminating said lanthionization when a desired level of relaxation of said keratin fibers has been reached.

76. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 75, wherein said at least one organic nucleophile is generated by at least one organic nucleophile source.

77. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 75, wherein said at least one organic nucleophile is generated *in situ*.

78. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 75, wherein said relaxing composition comprises at least one hydroxide ion generator which generates hydroxide ions *in situ*.

79. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 75, wherein said at least one organic nucleophile is chosen from basic amino acids, amines, alcohols, and mercaptans.

80. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 76, wherein said at least one organic nucleophile source is chosen from derivatives of basic amino acids, derivatives of amines, derivatives of alcohols, and derivatives of mercaptans.

81. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 79, wherein said basic amino acids are chosen from lysine, arginine, and histidine.

82. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 81, wherein said basic amino acids are chosen from lysine and arginine.

83. (withdrawn) A method for lanthionizing keratin fibers according to claim 82, wherein said basic amino acids are chosen from lysine and arginine in a non-ionic form, an ammonium form, and a carboxylate form.

84. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 79, wherein said at least one organic nucleophile is chosen from amines of the following formula and salts thereof:

N(R)3

wherein each R is independently chosen from a hydrogen atom, linear, branched, substituted, and unsubstituted C_1-C_{10} alkyl groups, and linear, branched, substituted, and unsubstituted C_1-C_{10} alkenyl groups.

85. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 84, wherein R comprises from 1 to 6 carbon atoms.

86. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said 0keratin fibers according to claim 85, wherein R comprises from 1 to 4 carbon atoms.

87. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 84, wherein at least one R is substituted with at least one group chosen from –COOR, –$COON(R)_2$, –OH, –SH, –$N(R)_2$ and salts of any of the foregoing, wherein each R is independently chosen from a hydrogen atom, linear, branched, substituted, and unsubstituted C_1-C_{10} alkyl groups, and linear, branched, substituted, and unsubstituted C_1-C_{10} alkenyl groups.

88. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 87, wherein R comprises from 1 to 6 carbon atoms.

89. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 88, wherein R comprises from 1 to 4 carbon atoms.

90. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 84, wherein said salts are chosen from ammonium

salts, alkali metal salts, alkaline earth metal salts, organic acid addition salts and inorganic acid addition salts.

91. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 90, wherein said salts are chosen from sodium salts, potassium salts, calcium salts, salts derived from hydrochloric acid, salts derived from sulphuric acid, salts derived from phosphoric acid, salts derived from acetic acid, salts derived from citric acid, and salts derived from tartaric acid.

92. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 79, wherein said amines are chosen from isopropylamine, monoethanolamine, and aminomethylpropanol.

93. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 75, wherein said at least one organic nucleophile is chosen from alcohols of the following formula and salts thereof:

R-OH

wherein R is chosen from linear, branched, substituted, and unsubstituted C_1-C_{10} alkyl groups, and linear, branched, substituted, and unsubstituted C_1-C_{10} alkenyl groups.

94. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 93, wherein R comprises from 1 to 6 carbon atoms.

95. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 94, wherein R comprises from 1 to 4 carbon atoms.

96. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 93, wherein R is substituted with at least one group chosen from –COOR', –COON(R')$_2$, –OH, –SH, –N(R')$_2$ and salts of any of the foregoing, wherein each R' is independently chosen from a hydrogen atom, linear, branched, substituted, and unsubstituted C_1-C_{10} alkyl groups, and linear, branched, substituted, and unsubstituted C1-C10 alkenyl groups.

97. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 96, wherein R comprises from 1 to 6 carbon atoms.

98. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 97, wherein R comprises from 1 to 4 carbon atoms.

99. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 96, wherein said salts are chosen from ammonium salts, alkali metal salts, alkaline earth metal salts, organic acid addition salts and inorganic acid addition salts.

100. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 99, wherein said salts are chosen from sodium salts, potassium salts, calcium salts, salts derived from hydrochloric acid, salts derived from sulphuric acid, salts derived from phosphoric acid, salts derived from acetic acid, salts derived from citric acid, and salts derived from tartaric acid.

101. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 75, wherein said at least one organic nucleophile is chosen from mercaptans of the following formula and salts thereof:

R-SH

wherein R is chosen from linear, branched, substituted, and unsubstituted C_1-C_{10} alkyl groups, and linear, branched, substituted, and unsubstituted C_1-C_{10} alkenyl groups.

102. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 101, wherein R comprises from 1 to 6 carbon atoms.

103. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 102, wherein R comprises from 1 to 4 carbon atoms.

104. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 101, wherein R is substituted with at least one group chosen from –COOR, –$COON(R)_2$, –OH, –SH, –$N(R)_2$ and salts of any of the foregoing, wherein each R is independently chosen from a hydrogen atom, linear, branched, substituted, and unsubstituted C_1-C_{10} alkyl groups, and linear, branched, substituted, and unsubstituted C_1-C_{10} alkenyl groups.

105. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 104, wherein R comprises from 1 to 6 carbon atoms.

106. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 105, wherein R comprises from 1 to 4 carbon atoms.

107. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 101, wherein said salts are chosen from ammonium salts, alkali metal salts, alkaline earth metal salts, organic acid addition salts and inorganic acid addition salts.

108. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 107, wherein said salts are chosen from sodium salts, potassium salts, calcium salts, salts derived from hydrochloric acid, salts derived from sulphuric acid, salts derived from phosphoric acid, salts derived from acetic acid, salts derived from citric acid, and salts derived from tartaric acid.

109. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 75, wherein at least one of said pretreatment composition and said relaxing composition further comprises at least one other constituent chosen from solvents; preservatives; perfumes; UV filters; active hair care agents; plasticizers; anionic, cationic, amphoteric, nonionic, and zwitterionic surfactants; hair conditioning agents; silicone fluids; fatty esters; fatty alcohol, fatty chain hydrocarbons; emollients; lubricants; penetrants; anionic, cationic, amphoteric, nonionic, and zwitterionic polymers; dyes; tints; bleaches; reducing agents; pH adjusting agents; sunscreens; thickening agents; and at least one agent chosen from chelating agents, sequestering agents and salts thereof.

110. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 75, wherein at least one of said pretreatment composition and said relaxing composition further comprises at least one additional nucleophile different from said at least one nucleophile.

111. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 75, wherein said at least one organic nucleophile is present in an amount ranging up to 100% by weight relative to the total weight of the pretreatment composition.

112. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 111, wherein said at least one organic nucleophile is present in an amount ranging from 0.001% to 10.0% by weight relative to the total weight of the pretreatment composition.

113. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 112, wherein said at least one organic nucleophile is present in an amount ranging from 0.01% to 2.0% by weight relative to the total weight of the pretreatment composition.

114. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 113, wherein said at least one organic nucleophile is present in an amount of 2.0% by weight relative to the total weight of the pretreatment composition.

115. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers, comprising:

applying a relaxing composition to keratin fibers for a sufficient period of time to lanthionize said keratin fibers, wherein said relaxing composition further comprises at least one organic nucleophile, and further wherein said at least one organic nucleophile is present in an amount effective to increase the tensile strength of said keratin fibers ranging from greater than 0.1% but less than 3% by weight relative to the total weight of the relaxing composition; and

terminating said lanthionization when a desired level of relaxation of said keratin fibers has been reached.

116. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 115, wherein said at least one organic nucleophile is generated by at least one organic nucleophile source.

117. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 115, wherein said at least one organic nucleophile is generated *in situ*.

118. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 115, wherein said relaxing composition comprises at least one hydroxide ion generator which generates hydroxide ions *in situ*.

119. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 115, wherein said at least one organic nucleophile is chosen from basic amino acids, amines, alcohols, and mercaptans.

120. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 116, wherein said at least one organic

nucleophile source is chosen from derivatives of basic amino acids, derivatives of amines, derivatives of alcohols, and derivatives of mercaptans.

121. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 117, wherein said basic amino acids are chosen from lysine, arginine, and histidine.

122. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 121, wherein said basic amino acids are chosen from lysine and arginine.

123. (withdrawn) A method for lanthionizing keratin fibers according to claim 122, wherein said basic amino acids are chosen from lysine and arginine in a non-ionic form, an ammonium form, and a carboxylate form.

124. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 119, wherein said at least one organic nucleophile is chosen from amines of the following formula and salts thereof:

N(R)3

wherein each R is independently chosen from a hydrogen atom, linear, branched, substituted, and unsubstituted C_1-C_{10} alkyl groups, and linear, branched, substituted, and unsubstituted C_1-C_{10} alkenyl groups.

125. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 124, wherein R comprises from 1 to 6 carbon atoms.

126. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 125, wherein R comprises from 1 to 4 carbon atoms.

127. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 124, wherein at least one R is substituted with at least one group chosen from –COOR, –$COON(R)_2$, –OH, –SH, –$N(R)_2$ and salts of any of the foregoing, wherein each R is independently chosen from a hydrogen atom, linear, branched, substituted, and unsubstituted C_1-C_{10} alkyl groups, and linear, branched, substituted, and unsubstituted C_1-C_{10} alkenyl groups.

128. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 127, wherein R comprises from 1 to 6 carbon atoms.

129. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 128, wherein R comprises from 1 to 4 carbon atoms.

130. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 124, wherein said salts are chosen from ammonium salts, alkali metal salts, alkaline earth metal salts, organic acid addition salts and inorganic acid addition salts.

131. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 130, wherein said salts are chosen from sodium salts, potassium salts, calcium salts, salts derived from hydrochloric acid, salts derived

from sulphuric acid, salts derived from phosphoric acid, salts derived from acetic acid, salts derived from citric acid, and salts derived from tartaric acid.

132. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 124, wherein said amines are chosen from isopropylamine, monoethanolamine, and aminomethylpropanol.

133. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 119, wherein said at least one organic nucleophile is chosen from alcohols of the following formula and salts thereof:

R-OH

wherein R is chosen from linear, branched, substituted, and unsubstituted C_1-C_{10} alkyl groups, and linear, branched, substituted, and unsubstituted C_1-C_{10} alkenyl groups.

134. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 133, wherein R comprises from 1 to 6 carbon atoms.

135. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 134, wherein R comprises from 1 to 4 carbon atoms.

136. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 133, wherein R is substituted with at least one group chosen from –COOR', –COON(R')$_2$, –OH, –SH, –N(R')$_2$ and salts of any of the foregoing, wherein each R' is independently chosen from a hydrogen atom, linear,

branched, substituted, and unsubstituted C_1-C_{10} alkyl groups, and linear, branched, substituted, and unsubstituted C_1-C_{10} alkenyl groups.

137. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 136, wherein R comprises from 1 to 6 carbon atoms.

138. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 137, wherein R comprises from 1 to 4 carbon atoms.

139. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 133, wherein said salts are chosen from ammonium salts, alkali metal salts, alkaline earth metal salts, organic acid addition salts and inorganic acid addition salts.

140. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 139, wherein said salts are chosen from sodium salts, potassium salts, calcium salts, salts derived from hydrochloric acid, salts derived from sulphuric acid, salts derived from phosphoric acid, salts derived from acetic acid, salts derived from citric acid, and salts derived from tartaric acid.

141. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 119, wherein said at least one organic nucleophile is chosen from mercaptans of the following formula and salts thereof:

R-SH

wherein R is chosen from linear, branched, substituted, and unsubstituted C_1-C_{10} alkyl groups, and linear, branched, substituted, and unsubstituted C_1-C_{10} alkenyl groups.

142. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 141, wherein R comprises from 1 to 6 carbon atoms.

143. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 142, wherein R comprises from 1 to 4 carbon atoms.

144. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 141, wherein R is substituted with at least one group chosen from –COOR, –$COON(R)_2$, –OH, –SH, –$N(R)_2$ and salts of any of the foregoing, wherein each R is independently chosen from a hydrogen atom, linear, branched, substituted, and unsubstituted C_1-C_{10} alkyl groups, and linear, branched, substituted, and unsubstituted C_1-C_{10} alkenyl groups.

145. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 144, wherein R comprises from 1 to 6 carbon atoms.

146. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 145, wherein R comprises from 1 to 4 carbon atoms.

147. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 141, wherein said salts are chosen from

ammonium salts, alkali metal salts, alkaline earth metal salts, organic acid addition salts, and inorganic acid addition salts.

148. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 147, wherein said salts are chosen from sodium salts, potassium salts, calcium salts, salts derived from hydrochloric acid, salts derived from sulphuric acid, salts derived from phosphoric acid, salts derived from acetic acid, salts derived from citric acid, and salts derived from tartaric acid.

149. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 115, wherein said relaxing composition further comprises at least one other constituent chosen from solvents; preservatives; perfumes; UV filters; active hair care agents; plasticizers; anionic, cationic, amphoteric, nonionic, and zwitterionic surfactants; hair conditioning agents; silicone fluids; fatty esters; fatty alcohol, fatty chain hydrocarbons; emollients; lubricants; penetrants; anionic, cationic, amphoteric, nonionic, and zwitterionic polymers; dyes; tints; bleaches; reducing agents; pH adjusting agents; sunscreens; and thickening agents.

150. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 115, wherein said relaxing composition further comprises at least one additional nucleophile different from said at least one organic nucleophile.

151. (withdrawn) A multicomponent kit for lanthionizing keratin fibers comprising at least two components, which are separate from each other,

wherein a first component comprises at least one organic nucleophile, and

wherein a second component comprises at least one hydroxide ion generator.

152. (withdrawn) A multicomponent kit for lanthionizing keratin fibers according to claim 151, wherein said at least one organic nucleophile is generated by at least one organic nucleophile source.

153. (withdrawn) A multicomponent kit for lanthionizing keratin fibers according to claim 151, wherein said first component is to be applied to said keratin fibers before said second component.

154. (withdrawn) A multicomponent kit for lanthionizing keratin fibers according to claim 151, wherein said first component is combined with said second component prior to application to said keratin fibers.

155. (withdrawn) A multicomponent kit for lanthionizing keratin fibers according to claim 151, wherein at least one of said first component and said second component is in a form chosen from an emulsion, a solution, a suspension, a gel, a cream, and a paste.

156. (withdrawn) A multicomponent kit for lanthionizing keratin fibers according to claim 151, wherein said keratin fibers are hair.

157. (original) A composition according to claim 1, wherein said keratin fibers are hair.

158. (original) A pretreatment composition for lanthionizing keratin fibers according to claim 36, wherein said keratin fibers are hair.

159. (withdrawn) A method for lanthionizing keratin fibers according to claim 75, wherein said keratin fibers are hair.

160. (withdrawn) A method for lanthionizing keratin fibers to achieve relaxation of said keratin fibers according to claim 115, wherein said keratin fibers are hair.

IX. Evidence Appendix

"*Milady's Hair Structure and Chemistry Simplified*" by Douglas D. Schoon, pages 191-192 ("*Schoon*") submitted by Appellants on February 5, 2004 and was entered into the record. *See* Final Office Action dated July 22, 2004.

X. Related Proceedings Appendix

None.

Please grant any extensions of time required to enter this Brief and charge any additional required fees to our Deposit Account No. 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

Dated: March 15, 2005

By: _____ Reg. No. 45,958 for
Ningling Wang
Reg. No. 52,412